PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-127360

(43)Date of publication of application : 11.05.1999

(51)Int.Cl. H04N 1/46
G06F 3/12
G06F 13/00
G06T 5/00

(21)Application number : 09-308098

(22)Date of filing : 23.10.1997

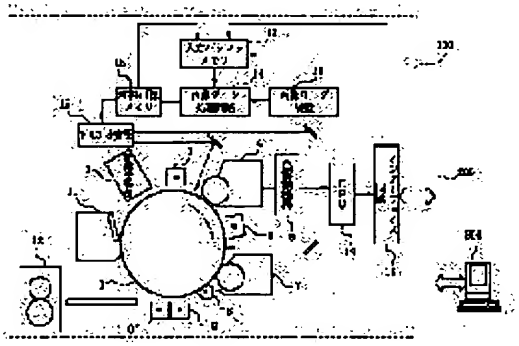
(71)Applicant : CANON INC

(72)Inventor : OGURA TOKIHIKO

(54) IMAGE PROCESSING SYSTEM AND IMAGE PROCESSING METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To confirm the result of an output print and also to quickly obtain a desired two-color print by performing two color conversion of a multicolored image, transferring it to a computer and the computer showing the transferred two color conversion image on a monitor.



SOLUTION: A host computer 300 transfers print color information and image data which are designated by a user to an image forming device 100. A CPU 19 performs data conversion processing into two colors in an image data processing circuit 14 in accordance with information and also stores the image data in an input buffer 17. When the transfer is accomplished, it shows an image after conversion on a monitor of the computer 300 and the user confirms the image. If there is no problem, print out is carried out. After laser light from a laser scanner device 15 sequentially forms an electrostatic latent image of red and black data that is performed two color conversion, developing devices 4 and 7 make them clear as toner images and a charging device imprints two color toners on recording paper.

LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

* NOTICES *

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention has the computer and image formation equipment which were connected to the network, and relates to the image processing system which outputs the multicolor color copy drawn up by computer etc. from image formation equipment by 2 color images, and the image-processing approach.
[0002]
[Description of the Prior Art] Like common knowledge, the copying machine or printer equipment of a digital method which used the electrophotography method formed image information as a latent image on electrostatic latent-image support by laser, LED, etc., formed it into the visible image with the developer, imprinted the visible image on record material after that, and has obtained the record image according to the established process.
[0003] In such a conventional copying machine and printer equipment, although the record image was black Isshiki, recently, multicolor type a high-speed copying machine and a printer with a manufacturing cost and a running cost lower than the full color type which used yellow, a magenta, cyanogen, and a black toner are proposed.
[0004] For example, by the copying machine type which has an image reader, three CCD (R (red), G (green), B (blue)) is carried, a full color pictorial image is read, a manuscript is disassembled into the component of three colors, and the method which expresses brightness and a hue by two colors of the black of many gradation and red is devised. In this case, a warm color system expresses red and a cold color system black, and expresses all hues by the red and black of many gradation.
[0005] An example which makes FURUKARA red / black 2 color separation is explained using drawing 10 .
[0006] Drawing 10 expresses between R(red)-B (blue) and B(blue)-G (green) and G(green)-R (red) for all hues as 120-degree regular intervals on the basis of R (red) shaft.
[0007] For example, if R [of a certain read image field (pixel) Q], G, and B each signal component sets to r, g, and b, respectively, maximum in it will be set to max (r, g, b), the minimum value will be set to min (r, g, b), and it will be referred to as L=max(r, g, b)-min (r, g, b). The difference of r, g, and b is small, namely, saturation will become large if the saturation of Signal Q is small if L is small, and L is large.
[0008] And signal level expressed with a black toner Bk=Lxcos(thetaBkx (pi/2)/WBk)+min (r, g, b) .... (1)
Signal level expressed with a red toner R=Lxcos (thetaRx (pi/2)/WRD) .... (2)
It comes out and expresses.
[0009] Here, thetaBk is the amount of bias from the black reference axis SBK (it is in agreement with B (blue) shaft in this case at 120 degrees the circumference of a half-clock with R shaft basis) shown in drawing 11 . WBk shows the range (it is hereafter called an angle of divergence) expressed black, and expresses the circumference of a clock, and the circumference of an anti-clock with WBKR (120

degrees) and WBKL (120 degrees), respectively. That is, a cos function expresses the ratio (thetaBk/WBKR or thetaBk/WBKL) of the angle of anomaly from a reference axis, and an angle of divergence for the level of concentration.
[0010] Similarly, thetaR is the amount of bias from the red reference angle SRD (in this case, 0 degree). WRD shows the range expressed in red and expresses the circumference of a clock, and the circumference of an anti-clock with WRDR (120 degrees) and WRDL (120 degrees), respectively. Thus, all hues can be expressed with the color mixture of **** 2 color by setting up a conversion shaft.
[0011] Drawing 12 is an example of one-pass 2 color electrophotography equipment with such a color conversion function.
[0012] The first electrification machine 102, the first photographic filter 103, the first development counter 104, the re-electrification machine 105, the second photographic filter 106, and the second development counter 107 are arranged around a photo conductor 101, and 2 color images are obtained by one revolution of a photo conductor 101.
[0013] For example, suppose that the full color image read by the image reader 112 is expressed by red and black 2 color. Moreover, suppose that a black toner performs the second image formation according the first image formation by the first development counter 104 to a red toner and the second development counter 107.
[0014] First, the residual charge on a photo conductor is removed by pre-exposure equipment 111, and a photo conductor 101 is charged in desired potential with the first electrification vessel 102. The image data changed into the red of the full color images automatically changed two colors by transform processing mentioned above from the image-data-processing circuit 113 is inputted into a photographic filter 103, and the part equivalent to an image field is exposed. In this way, the first development counter 104 develops the formed first latent-image image with a red toner.
[0015] Next, the first image formed with the red toner receives electrification in homogeneity again with the re-electrification vessel 105. Furthermore, the image data changed into black from the image-data-processing circuit 113 like the first image is outputted, and the part which is equivalent to an image field with the second photographic filter 106 is exposed. In this way, the second development counter 107 develops the third formed latent-image image with a black toner.
[0016] And it is separated from a photo conductor 101 by the separation electrification machine 109, the recording paper with which first and second 2 color toner images formed on the photo conductor 101 were imprinted by the recording paper with the imprint electrification vessel 108, and the toner image was imprinted is conveyed by the non-illustrated anchorage device, and the recording paper is fixed to a toner. Cleaning equipment 110 removes the residual toner which remained on the photo conductor 101.
[0017] Thus, a full color image is expressed with the red of many gradation, and black color mixture, and 2 color images without a drop out are formed.
[0018]
[Problem(s) to be Solved by the Invention] However, a multicolor manuscript is drawn up on the computer which connects the above-mentioned image formation equipment to networks, such as LAN (Local Area Network), and is connected with it, and in outputting the creation image by two colors with the above-mentioned image formation equipment via LAN, the following problems arise.
[0019] That is, since a user does image transformation of the creation manuscript data to image formation equipment in delivery and the image-data-processing circuit of a body, unless he is after he outputs the last resolution picture to the recording paper, he cannot check the result of a creation image.
[0020] Although it is also possible to carry out image transformation of the creation image on a host computer, and to check the result, it is necessary to carry the conversion program of an algorithm equivalent to said image-data-processing circuit 113 on a host computer in this case. furthermore -- although it is convertible for a high speed if it is the computer which has highly efficient CPU -- low -- by computer of personal computer level [****], the problem of taking time amount dramatically for conversion arises.
[0021] This invention aims at offering the image processing system which can obtain desired 2 color print promptly [can check the result of an output print and] in the computer connected on the network,

and the system which has image formation equipment, and the image-processing approach in view of the above-mentioned conventional trouble.

[0022]

[Means for Solving the Problem] The image formation equipment which carries out the printed output of the 2 color images which the 1st invention has the image-data-processing circuit which changes two colors of inputted multicolor color pictures, and were outputted from this image-data-processing circuit in order to attain the above-mentioned object, In the image processing system equipped with the computer connected with said image formation equipment through the network said image formation equipment Making it the configuration which changes two colors of said multicolor color picture in said image-data-processing circuit, and is transmitted to said computer, said computer makes 2 color resolution picture transmitted from said image formation equipment the configuration displayed on a monitor.

[0023] In the 2nd invention, said computer is made the configuration which creates said multicolor color picture and is transmitted to said image formation equipment in the 1st above-mentioned invention.

[0024] In the 3rd invention, in the 1st above-mentioned invention, said image formation equipment has image reader equipment equipped with the solid state image pickup device which reads a multicolor color picture, and makes the multicolor color picture read in said image reader equipment the configuration changed two colors by said image-data-processing circuit.

[0025] The image formation equipment which carries out the printed output of the 2 color images which have the image-data-processing circuit which changes two colors of inputted multicolor color pictures in the 4th invention, and were outputted from this image-data-processing circuit, In the image processing system equipped with the computer which is connected with said image formation equipment through a network, creates said multicolor color picture, and is transmitted to said image formation equipment Before transmitting said computer to said image formation equipment to the created multicolor color picture, it is made the configuration which performs simple 2 color conversion with the tint near 2 color images outputted from this image formation equipment, and displays the image with a monitor.

[0026] In the 5th invention, the image of said simple 2 color conversion is generated in the 4th above-mentioned invention from red and the red signal data which fulfilled green, and the signal data formed from blue and the conditions set up beforehand.

[0027] In the 6th invention, said simple 2 color conversion is changed in the 4th above-mentioned invention based on the color translation data currently beforehand held in said computer.

[0028] By 7th invention, in the above 1st thru/or the 6th invention, said image formation equipment is an electrophotography method which forms 2 color images in the image formation process of one photo conductor revolution, and 2 color conversion by said image-data-processing circuit expresses all the colors of an original copy multi-colored picture image by the color of a wearing development means.

[0029] The image formation equipment which carries out the printed output of the 2 color images which have the image-data-processing circuit which changes two colors of inputted multicolor color pictures in the 8th invention, and were outputted from this image-data-processing circuit, The image processing system equipped with the computer connected with said image formation equipment through the network is used. Two colors of said multicolor color picture are changed in said image-data-processing circuit, and it transmits to said computer, and after displaying the image on the monitor of said computer, it is made to carry out a printed output.

[0030] In the 9th invention, in the 8th above-mentioned invention, said multicolor color picture is created by said computer, transmits the multicolor color picture to said image formation equipment, it is changed two colors in said image-data-processing circuit, and it transmits it to said computer again, and after it displays the image on the monitor of this computer, it is made to carry out the printed output of it.

[0031] In the 8th above-mentioned invention, two colors of multicolor color pictures read in the image reader equipment of said image formation equipment are changed by said image-data-processing circuit, and after transmitting the image data after the conversion to said computer and displaying on a monitor, it is made to carry out a printed output in the 10th invention from said image formation equipment.

[0032] The image formation equipment which carries out the printed output of the 2 color images which have the image-data-processing circuit which changes two colors of inputted multicolor color pictures in the 11th invention, and were outputted from this image-data-processing circuit, The image processing system equipped with the computer which is connected with said image formation equipment through a network, creates said multicolor color picture, and is transmitted to said image formation equipment is used. Simple 2 color conversion is performed to the multicolor color picture created by said computer with the tint near 2 color images outputted from this image formation equipment. The image is displayed with a monitor, and after transmitting the image data before said simple 2 color conversion to said image formation equipment and changing two colors in said image-data-processing circuit, it is made to carry out a printed output.
[0033] In the 12th invention, the image of said simple 2 color conversion is generated in the 11th above-mentioned invention from red and the red signal data which fulfilled green, and the signal data formed from blue and the conditions set up beforehand.
[0034] In the 13th invention, said simple 2 color conversion is changed in the 11th above-mentioned invention based on the color translation data currently beforehand held in said computer.
[0035] By 14th invention, in the 8th above-mentioned invention thru/or the 13th invention, said image formation equipment is an electrophotography method which forms 2 color images in the image formation process of one photo conductor revolution, and 2 color conversion by said image-data-processing circuit expresses all the colors of an original copy multi-colored picture image by the color of a wearing development means.
[0036]
[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to a drawing.
[0037] Drawing 1 is drawing showing the configuration of the image processing system concerning the 1st operation gestalt of this invention.
[0038] This image processing system is equipped with image formation equipment 100 and the computer 300 connected to this through the network 200.
[0039] The internal configuration of image formation equipment 100 is explained. As for the drum-photo conductor with a diameter of 108mm with which one in drawing used the organic semiconductor (OPC) for the sensitization layer, and 2, pre-exposure equipment and 3 are primary electrification machines. 4 is the first development counter and a developer is the so-called 2 component developer which consists of a red toner and a carrier.
[0040] The second development counter with which a color recognition device for 5 to recognize the color in the first development counter and 6 are in a re-electrification machine, and, as for close, a black 1 component magnetism toner is in 7, and 8 are postelectrification machines, and are for arranging the toner charge of drum lifting with constant value. An imprint electrification machine for 9 to imprint a toner on the recording paper and 10 are the separation electrification machines for separating the recording paper from a drum photo conductor.
[0041] The image reader equipment which a cleaning device for 11 to remove the toner which remained on the drum photo conductor, and 12 read a full color image with an anchorage device, and can read 13 with 256 gradation, and 14 are image-data-processing circuits, and change into monochrome or 2 color images the shading compensation of the image data read in image reader equipment 13, concentration conversion, full color, and a multicolor manuscript.
[0042] Resolution picture memory for input buffer memory for the interface circuitry for laser-scanner equipment for 15 forming the latent image of the part corresponding to an image field and 16 connecting with an external network, and outputting and inputting a control signal and an image data signal and 17 to store the image inputted from the outside temporarily and 18 to store the image data changed two colors and 19 are CPUs which control the whole equipment.
[0043] Drawing 2 is a part of internal configuration of the image-data-processing circuit 14, by the control signal from ~~CPU~~19, 2 color transform-processing circuit 14-1 operates, and RAM 18-1 for black of the resolution picture memory 18 and red data are stored in RAM 18-2 for red for the changed black

data.
[0044] Next, a color copy is drawn up on the computer 300 connected to this image formation equipment 100 by the network 200, and the actuation in the case of outputting it by 2 color images is explained using the flow chart of drawing 3 (a), (b), and (c). In addition, drawing 3 (a) and (c) show actuation of a host computer, and drawing 3 (b) shows actuation of image formation equipment.
[0045] First, an output printer (image formation equipment 100) is specified from a host computer 300 (step S11 of drawing 3 (a)). A host computer 300 reads the color information on the first development counter 4 of image formation equipment 100 (step S12), and displays the information on a monitor (step S13).
[0046] Subsequently, a user does 2 color print, a monochrome print is carried out, or, in a monochrome print, a color (black or red) is specified (step S14). And a host computer 300 transmits the print color information and image data to image formation equipment 100 (step S15). In addition, the image data to transmit is developed and sent to the bit map data of R, G, and B.
[0047] If print color information and image data are inputted into image formation equipment 100 (step S21 of drawing 3 (b)), CPU19 will read a translation mode in the print color information (steps S22 and S23), and will perform transform processing of data in the **** data-processing circuit 14 according to the information (steps S24 and S25). Moreover, image data is stored in the input buffer memory 17.
[0048] According to the concentration transformation (1) shown in the conventional example with the color conversion shaft which shows 2 color transform processing (step S24) to drawing 4 , and (2), reading appearance of the data is carried out from the sequential input buffer memory 17, and conversion is performed. In addition, the red of an original copy manuscript and yellow are expressed by the shade of a red toner, and the conversion shaft of drawing 4 expresses blue, cyanogen, and Green by the shade of a black toner. And a Magenta is expressed with the inside concentration color mixture of red and black. SBK in drawing is 120 degrees the circumference of a half-clock in R shaft basis, and is in agreement with B (blue) shaft in this case. WBKR is expressed with 120 degrees and WBKL is expressed with 150 degrees the circumference of a half-clock the circumference of a clock. Similarly, 0 degree and WRDR are expressed with 120 degrees, and SRD expresses WRDL with 120 degrees the circumference of a half-clock the circumference of a clock.
[0049] Monochrome conversion (step S25) uses as the data of black or red the brightness value Y which is the arithmetic sum (0.3xR+0.59xG+0.11xB) of R, G, and B each signal data value. In this case, the monochrome conversion circuit 14-2 of drawing 2 operates, and the image data after conversion is stored in RAM 18-1 for black, or RAM 18-2 for red.
[0050] As for storing **** and resolution picture data, resolution picture data are altogether transmitted to the image memory 18 through an interface circuitry 16 to a host computer 300 again (step S26).
[0051] Termination of all resolution picture data transfers displays the image after changing on a monitor (steps S31 and S32). And after an image check, if satisfactory, a printed output will be performed (step S34). Moreover, when there are nonconformities, such as a tint, whenever [angle-of-divergence / of a conversion shaft / or criteria axial-angle] etc. is reset up from a host computer 300, the information is sent to image formation equipment 300, and transform processing is performed again (SUTEFFU 35-S37).
[0052] If a printed output command is outputted to image formation equipment 100 from a host computer 300, the drum photo conductor 1 will start a revolution in the direction of the arrow head shown in drawing by the non-illustrated motor. And after being charged in desired potential with the primary electrification vessel 3, a laser beam is irradiated from laser-scanner equipment 15, and when it is 2 color print, the first electrostatic latent image of the red data by which 2 color transform processing was carried out is formed.
[0053] The first electrostatic latent image formed on the drum photo conductor 1 is developed by the first development counter 4 with which a red toner is in close, and it develops it as a toner image. The first red toner image which continued and the re-electrification machine 6 developed is re-charged, the laser beam from laser-scanner equipment 15 is irradiated on the drum photo conductor 1, and the second electrostatic latent image of the black data by which 2 color conversion was carried out is formed.

[0054] The second electrostatic latent image formed on the drum photo conductor 1 is developed by the second development counter 7, and it develops it as a toner image. And after the amount of charges of a toner is uniformly arranged with the postelectrification vessel 8, 2 color toner is imprinted by the recording paper with which it was fed from the non-illustrated sheet paper cassette with the imprint electrification vessel 9. After an imprint, it is separated from the drum photo conductor 1 by the separation electrification machine 10, the recording paper is sent to an anchorage device 12, and it is fixed to it by application of pressure and heating, and it is discharged besides a body. In the meantime, a residual toner is cleaned by the cleaning device 11 and, as for the drum photo conductor 1, residual charge is eliminated by pre-exposure equipment 2.
[0055] In addition, in a monochrome print, the first development counter 4 and the re-electrification machine 6 will be un-operating at the time of black monochrome, and, in the case of red monochrome, the re-electrification machine 6 and the second development counter 7 will be in non-operating state.
[0056] thus , since it be made having carry out a printed output after it once transmitted the multiple color or the full color image created on the computer connected to the network to image formation equipment , it transmitted resolution picture data to the host computer side again since high-speed conversion be carried out in the image data processing circuit in this image formation equipment , and having check on the monitor of a host computer , the tint of an output print can check with a sufficient precision , and a desired 2 color print can obtain promptly with this operation gestalt .
[0057] Next, the 2nd operation gestalt of this invention is explained.
[0058] Although the data which changed both both colors with image formation equipment were expressed as the host computer 300 with the above-mentioned 1st operation gestalt, only 2 color conversion which a conversion time requires is changed with image formation equipment like a **** 2 operation gestalt, and you may make it make it check with the monitor of a host computer 300. Drawing 5 is a flow chart which shows actuation of the image processing system concerning the 2nd operation gestalt of this invention.
[0059] Monochrome or two colors are chosen at step S44 through processing of step S41 of drawing 5 - step S43. When two colors are chosen, as explanation was given [above-mentioned], image data is transmitted to image formation equipment 100 (step S46), and a printed output is performed, after inputting an resolution picture into a host computer 300 again, displaying it on a monitor and checking it. In performing a monochrome print, an resolution picture is not displayed and it performs a printed output for image data to a host computer 300 promptly after delivery and conversion termination as it is (step S47).
[0060] Moreover, when printing two colors of images read from image reader equipment 13, in order to check 2 color resolution picture before carrying out a printed output, translation data is transmitted to a host computer 300, and you may make it check an image. Although it was the copying machine which has image reader equipment 13 with the above-mentioned operation gestalt, the printer equipment which does not have image reader equipment 13 but has only the image-data-processing circuit 14 may be used. In addition, although colors other than black were made into red in the above-mentioned explanation, it is not limited to red.
[0061] Next, the 3rd operation gestalt of this invention is explained.
[0062] Drawing 6 is drawing showing the configuration of the image processing system concerning the 3rd operation gestalt of this invention.
[0063] The configuration of the 3rd operation gestalt is what excluded the resolution picture memory 18 in the image formation equipment shown in drawing 1 .
[0064] A color copy is drawn up on the computer 300 connected to this image formation equipment by the network 200, and the actuation in the case of outputting it by 2 color images is explained using the flow chart of drawing 7 .
[0065] First, an output printer (image formation equipment 100) is specified from a host computer 300 (step 51). A host computer 300 reads the color information on the first development counter 4 of image formation equipment 100 (step S52), and displays the information on a monitor (step S53).
[0066] Subsequently, a user chooses 2 color print or a monochrome print (step S54). When 2 color print

is chosen, it progresses to step S55 and simple 2 color transform processing is performed. When monochrome conversion is chosen, it progresses to step S56 and monochrome transform processing is performed.

[0067] Here, simple 2 color transform processing of step S55 is explained.

[0068] According to the above-mentioned concentration transformation (1) and (2), two colors of image data incorporated with image reader equipment 13 are changed with the color conversion shaft shown in drawing 4 . On the other hand, before the data of the manuscript drawn up with the host computer 300 are transmitted to image formation equipment 100, they are changed two colors in simple on a host computer 300.

[0069] That is, if the flow chart shown in drawing 8 explains, image data will be first developed to the bit map data of R, G, and B each plane in empty space, such as RAM or a hard disk, (step S61). The address i of the read-out data of a pixel is initialized (step S62), reading appearance of the pixel data which are equivalent to a same-on image location from R, G, and B each memory plane is carried out, and the data equivalent to black are generated.

[0070] Let this data be the brightness data Y which are the arithmetic sum (0.3xR+0.59xG+0.11xB) of R, G, and B each data value (step S63). And data Y (i) is stored in the predetermined address of the memory for monitor displays.

[0071] The data equivalent to red are generated as follows. As for R (i), G (i), and B (i) data which were read when generating Y (i) data, magnitude is compared (step S65). And R is max, and when a difference with larger B and G is beyond the predetermined value K (steps S66 and S67), the pixel is judged near the reference axis of R, and brightness data (Y (i)) are transposed to R (i) data as it is (step S68). The value of K will be set to 80h (hexadecimal) here, if the quantifying bit number of data is made into 8 bits. Thus, the above-mentioned conversion is performed about all pixel data one by one (steps S69 and S70).

[0072] Drawing 9 (a), (b), and (c) are drawings which expressed the level and the hue of an RGB code of a certain pixel with the vector. This drawing (a) is between cyanogen/blue as a hue, and in this case, since the level of R is small compared with B and G, the data of Y serve as a foreground color of that pixel. Although this drawing (b) has largest R, since the magnitude of signal level is smaller than 80h (hexadecimal), it becomes Y data. The signal level of R of this drawing (c) is max, and since level is also 80h or more, the data of R serve as a foreground color of a pixel in this case.

[0073] Although monochrome transform processing is performed when monochrome processing is chosen as drawing 7 at return and step S54 (step S56), Y data conversion which gave [above-mentioned] explanation is performed, and monochrome transform processing here chooses whether it makes into black whether to make an output color into red (steps S56 and S57).

[0074] Thus, after conversion of all pixels is completed, when 2 color print is set up, the image after 2 color conversion is displayed on a monitor, and when a monochrome print is set up, image display is carried out in a selection color.

[0075] Then, if a printed output command is outputted to image formation equipment 100 from a host computer 300, the image data of an original copy will be transmitted to the buffer memory 17 of image formation equipment 100 from a host computer 300. 2 color conversion of the image data to which all the image data transfers were transmitted after termination or the data transfer of the specified quantity was completed is performed one by one in the image-data-processing circuit 14, and the drum photo conductor 1 starts a revolution in the direction of the arrow head shown in drawing by the non-illustrated motor.

[0076] Then, after being charged in desired potential with the primary electrification vessel 3, a laser beam is irradiated from laser-scanner equipment 15, and the first electrostatic latent image of the red data by which 2 color transform processing was carried out is formed. The first electrostatic latent image formed on the drum photo conductor 1 is developed by the first development counter 4 with which a red toner is in close, and it develops it as a toner image. Then, the first red toner image which the re-electrification machine 6 developed is re-charged, the laser beam from laser-scanner equipment 15 is irradiated on the drum photo conductor 1, and the second electrostatic latent image of the black data by

which 2 color conversion was carried out is formed. The second electrostatic latent image formed on the drum photo conductor 1 is developed by the second development counter 7, and it develops it as a toner image.
[0077] And after the amount of charges of a toner is uniformly arranged with the postelectrification vessel 8, 2 color toner is imprinted by the recording paper with which it was fed from the non-illustrated sheet paper cassette with the imprint electrification vessel 9. After an imprint, it is separated from the drum photo conductor 1 by the separation electrification machine 10, the recording paper is sent to an anchorage device 12, and it is fixed to it by application of pressure and heating, and it is discharged besides a body. In the meantime, a residual toner is cleaned by the cleaning device 11 and, as for the drum photo conductor 1, residual charge is eliminated by pre-exposure equipment 2.
[0078] Thus, as the multiple color or the full color image created by computer connected on the network is changed into simple 2 colors by computer with the tint near an output 2 color image as much as possible and it was made to check with a monitor, since, and, since image data is transmitted to image formation equipment and it was made to carry out high-speed conversion in the image-data-processing circuit, desired 2 color print can be obtained promptly.
[0079] Although the above-mentioned 2nd operation gestalt explained the method which a limit does not have in the color number of an original copy manuscript, and can also change simple two colors also of full color manuscripts There are few foreground colors in a host computer, for example, when only the expression with which saturation differed only from lightness can be performed on the basis of six colors of R, G, B, Ye, Mg, and Cy, it is brightness Y except R, Mg, and Ye, and you may make it express R, Mg, and Ye by Y and R. The level of R added to the Y signal after conversion of R, Mg, and Ye here will become convertible by short-time processing, if the fixed level beforehand set up by R, Mg, and Ye is added.
[0080] moreover -- the conversion shaft of drawing 4 -- Mg -- since high-concentration black and Cy are changed into the black of inside concentration and G is changed [high-concentration red and Ye] into low-concentration black for the red of inside concentration, and B, the **** color mixture of medium concentration and R may create a ROM table in a host computer beforehand. In addition, although colors other than black were made into red in the above-mentioned explanation, it is not limited to red and you may make it change a conversion program according to the color of the developer of the first development counter.
[0081]
[Effect of the Invention] As explained in full detail above, according to the image processing system which are the 1st thru/or the 3rd invention, it becomes possible to be able to check the result of an output print to accuracy and to obtain desired 2 color print promptly, since a printed output can be carried out after a user checks the result of a creation image on the monitor of a computer.
[0082] Since according to the image processing system which are the 4th thru/or the 7th invention image data can be transmitted to image formation equipment and high-speed conversion can be carried out in a image-data-processing circuit after changing the created color picture into simple 2 colors by the computer side with the tint near an output 2 color image as much as possible and checking this with a monitor, the result of an output print can be checked and it becomes possible to obtain desired 2 color print promptly.
[0083] According to the image-processing approach which are the 8th thru/or the 10th invention, effectiveness equivalent to the above 1st thru/or the 3rd invention is done so.
[0084] According to the image-processing approach which are the 11th thru/or the 14th invention, effectiveness equivalent to the above 4th thru/or the 7th invention is done so.

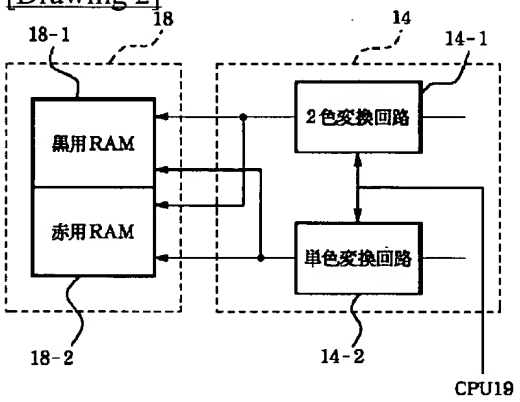
[Translation done.]

* NOTICES *

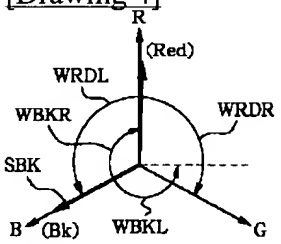
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

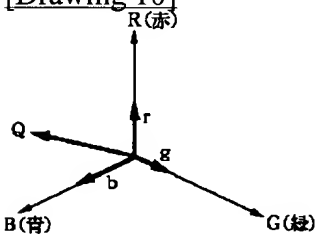
[Drawing 2]



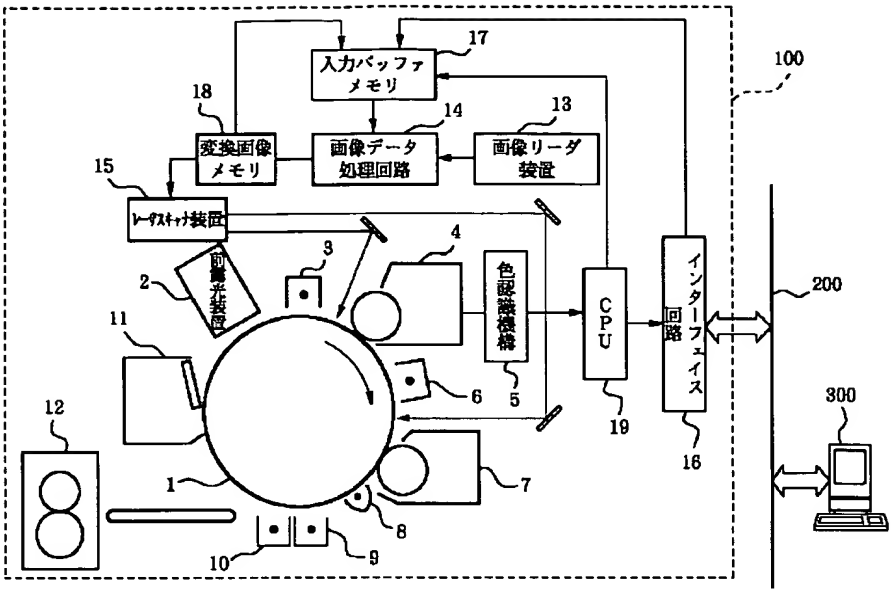
[Drawing 4]



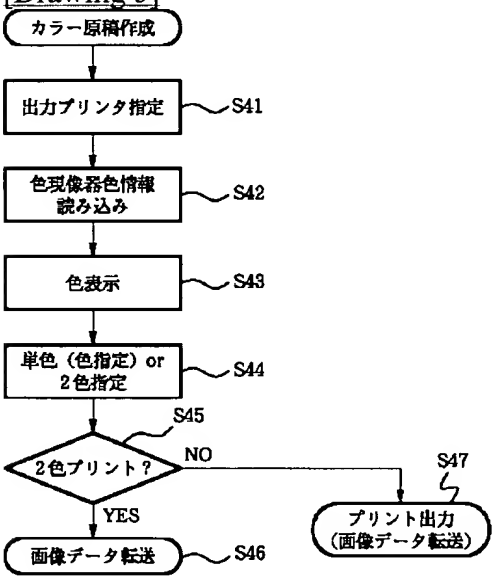
[Drawing 10]



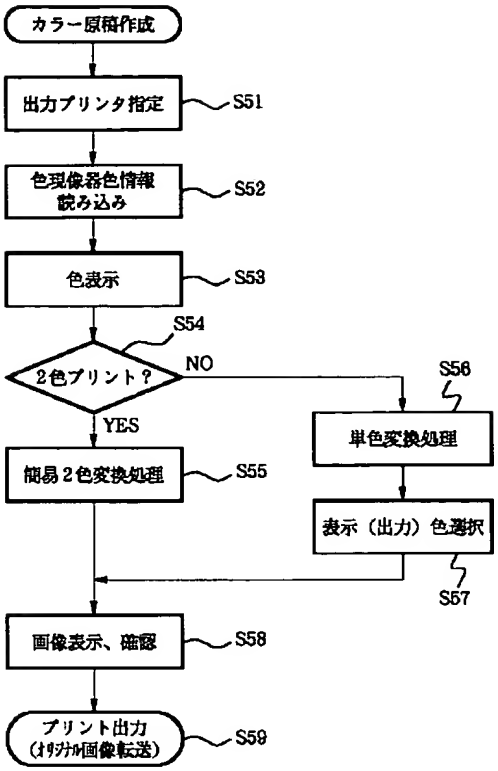
[Drawing 1]



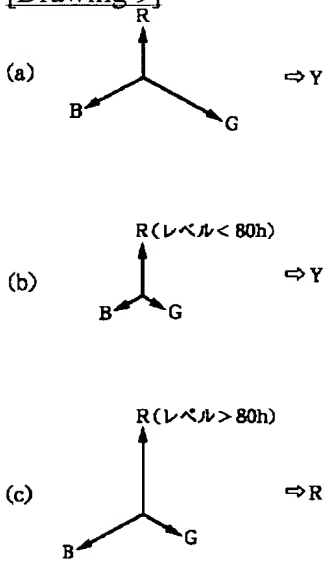
[Drawing 5]



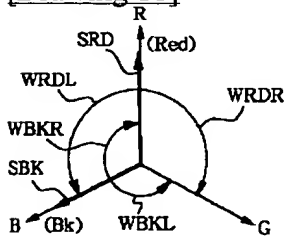
[Drawing 7]



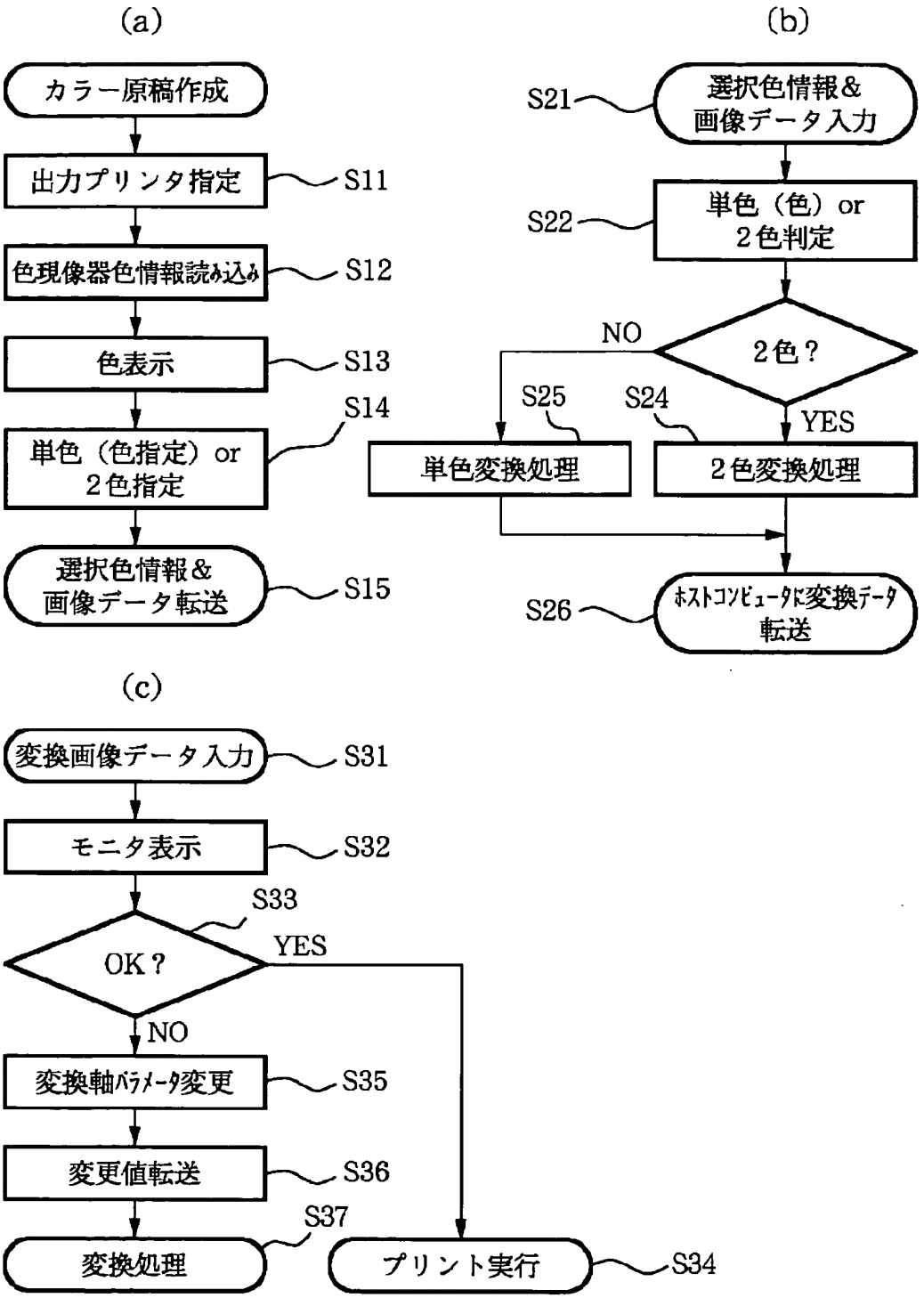
[Drawing 9]



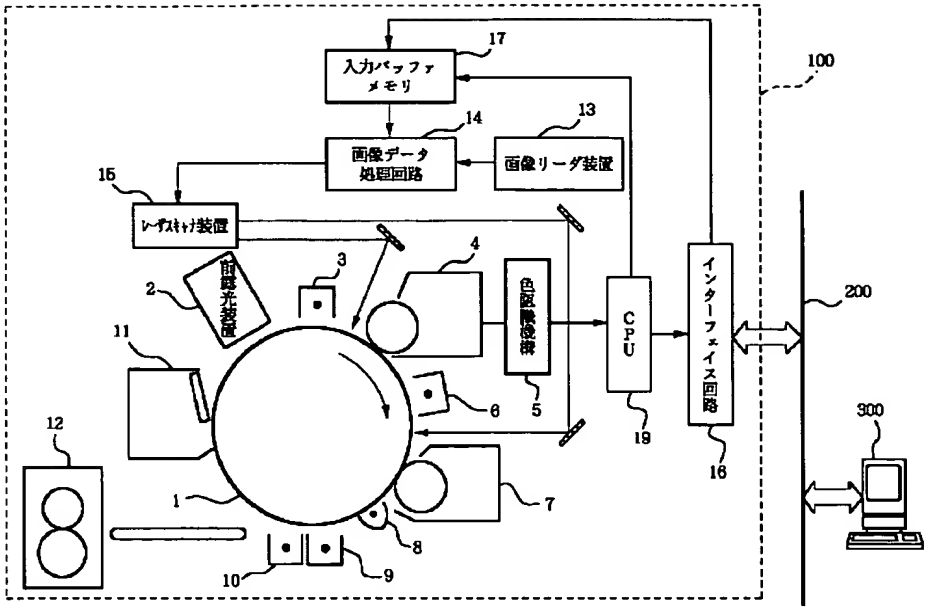
[Drawing 11]



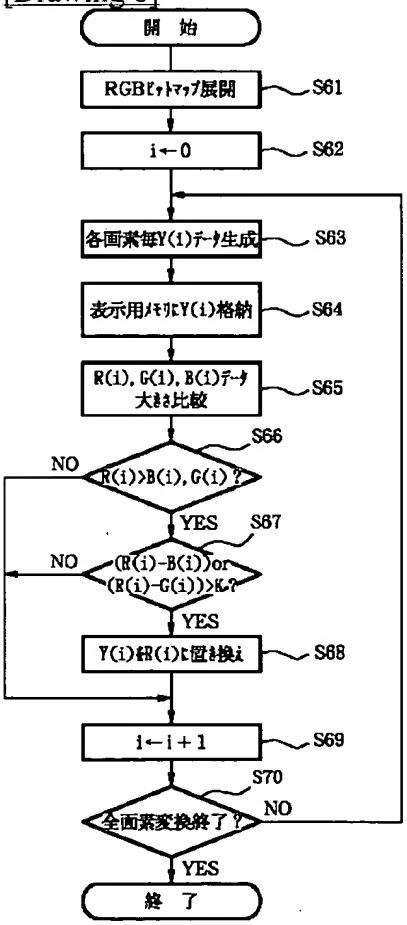
[Drawing 3]


(a)
カラー原稿作成
出力プリンタ指定
S11
色現像器色情報読み込み
S12
色表示
S13
単色（色指定）or
2色指定
S14
選択色情報＆
画像データ転送
S15
(b)
S21
選択色情報＆
画像データ入力
S22
単色（色）or
2色判定
NO
2色？
YES
S25
S24
単色変換処理
2色変換処理
S26
ホストコンピュータに変換データ
転送
(c)
変換画像データ入力
S31
モニタ表示
S32
S33
OK？
YES
NO
変換軸パラメータ変更
S35
変更値転送
S36
S37
変換処理
プリント実行
S34

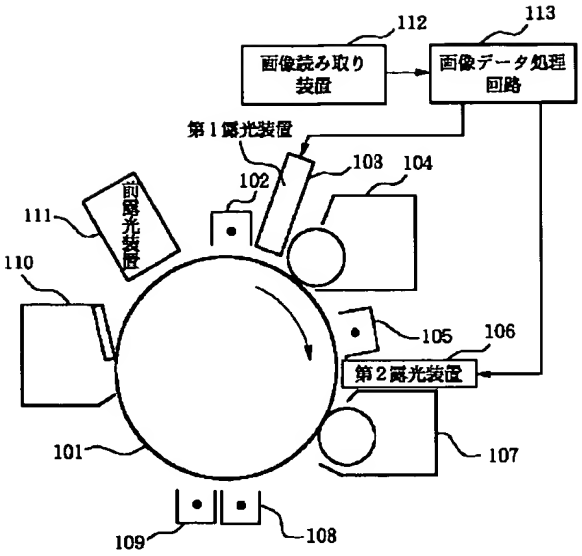
[Drawing 6]



[Drawing 8]



[Drawing 12]



[Translation done.]